

What is claimed is:

1. A method for automating directory assistance without operator intervention comprising:
 - a) receiving an audible listing and locality response from a caller requesting directory assistance;
 - b) determining a listing query based on the listing response and a locality query based on the locality response;
 - c) initiating a search of a directory assistance database using the listing query and the locality query;
 - d) receiving a listing response containing at least one record having a listing associated with a number; and
 - e) selecting a record containing a number corresponding to the audible listing and locality response for announcement to the caller.
2. The method of claim 1 wherein the determining step further comprises determining the listing query based on the listing response using listing grammar derived from most frequently requested listings for the directory assistance database.
3. The method of claim 2 wherein the listing grammar associates a plurality of potential listing responses with a general listing and the determining step further comprises determining that the listing response is one of the plurality of potential listing responses and determining the listing query based on the general listing.

4. The method of claim 2 wherein the determining step further comprises determining the locality query based on the locality response using locality grammar derived from most frequently requested listings for the directory assistance database.

5. The method of claim 1 wherein the listing query is not based on the locality response and the locality query is not based on the listing response.

6. The method of claim 2 wherein the most frequently requested listings are not a function of locality.

7. The method of claim 1 wherein the determining step further comprises:

- a) sending the listing response for grammar processing to determine listing query information;
- b) sending the locality response for grammar processing to determine locality query information;
- c) receiving the listing query information and locality query information; and
- d) deriving the listing query and locality query from the listing query information and locality query information.

8. The method of claim 1 wherein the determining step further comprises:

- a) sending the listing response for grammar processing to determine listing query information based on most frequently requested listings for the directory assistance database;
- b) sending the locality response for grammar processing to determine listing query information;
- c) receiving the listing query information and locality query information; and
- d) deriving the listing query and locality query from the listing query information and locality query information.

9. The method of claim 1 wherein the determining step further comprises:

- a) sending the listing response for grammar processing;
- b) sending the locality response for grammar processing;
- c) receiving a grammar tag including listing and locality information based on the listing response and the locality response; and
- d) deriving the listing query and locality query from the grammar tag.

10. The method of claim 1 wherein when the listing response includes a plurality of records, the selecting step further comprising sifting to eliminate
5 ones of the plurality of records until there is one record or a common number throughout any remaining records.
11. The method of claim 10 wherein when at least one of
10 the plurality of records includes a locality matching the caller's locality response and the sifting step further comprises removing all other records in the plurality of records not containing the locality.
12. The method of claim 10 wherein the determining step further determines an expected number for a frequently requested listing corresponding to the listing response and when at least one of the plurality of records includes the expected number the sifting step
15 further comprises removing all other records in the plurality of records not containing the expected number.
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13. The method of claim 12 wherein when certain of the
25 plurality of records contain a given listing and locality the sifting step further comprises removing all records not having a toll-free number if one of the certain records contains the toll-free number.

14. The method of claim 13 wherein when certain of the plurality of records contain a given listing and number the sifting step further comprises combine the certain records into one.
15. The method of claim 14 wherein when the sifting step fails to eliminate ones of the plurality of records until there is one record or a common number throughout any remaining records, transferring the listing response and locality response to an operator.
16. The method of claim 1 further comprising initiating announcement of the selected number to the caller.
17. The method of claim 2 further comprising generating the listing grammar by:
- a) identifying the most frequently requested listings independent of locality;
 - b) grouping synonymous listings within the most frequently requested listings; and
 - c) determining a common vocabulary for a group of synonymous listings,
- wherein when a requested listing matches any listing in the group of synonymous listings, the grammar constructed to produce the common vocabulary for generating the listing query used to search the directory assistance database.

18. The method of claim 17 further comprising generating the locality grammar by:

- a) identifying the most frequently requested localities independent of listing;
- b) grouping synonymous localities within the most frequently requested localities; and
- c) determining a common vocabulary for a group of synonymous listings,

wherein when a requested locality matches any locality in the group of synonymous localities, the grammar will produce the common vocabulary for generating the locality query used to search the directory assistance database.

19. A method for directory assistance automation comprising:

- a) requesting a desired listing and locality from a caller;
- b) storing a listing response and a locality response from the caller;
- c) generating a listing search query based on comparing the listing response with most frequently requested listings similar to the listing response, said listing search query independent of the locality response;
- d) generating a locality search query independent of the listing response and based on the locality response;
- e) searching a directory assistance database using the listing and locality queries; and

f) processing results of the directory assistance database search to select a number corresponding to the listing response and locality response.

- 5 20. A system for automated directory assistance automation without operator intervention comprising a control system associated with a telephony line interface and a network interface, said control system adapted to:
- 10 a) receive an audible listing and locality response from a caller requesting directory assistance via said telephony line interface;
- b) determine a listing query based on the listing response and a locality query based on the locality response;
- 15 c) initiate a search of a directory assistance database using the listing query and the locality query via the network interface;
- d) receive a listing response containing at least one record having a listing associated with a number
- 20 via the network interface; and
- e) select a record containing a number corresponding to the audible listing and locality response for announcement to the caller,
- wherein the listing and locality searches are
- 25 substantially independent of one another and directory assistance automation is provided without operator assistance.

21. The system of claim 20 wherein said control system is configured to:

- a) send the listing response to a speech recognition system to determine listing query information;
- b) send the locality response to the speech recognition system to determine listing query information;
- c) receive the listing query information and locality query information from the speech recognition system; and
- d) derive the listing query and locality query from the listing query information and locality query information.

22. The system of claim 20 wherein said control system is configured to:

- a) send the listing response to a speech recognition system to determine listing query information based on most frequently requested listings for the directory assistance database;
- b) send the locality response to a speech recognition system to determine listing query information;
- c) receive the listing query information and locality query information from the speech recognition system; and
- d) derive the listing query and locality query from the listing query information and locality query information.

23. The system of claim 20 wherein said control system is configured to provide speech recognition based on a defined grammar, said control system adapted to:

- a) process the listing response based on the grammar;
- b) process the locality response based on the grammar;
- and
- c) derive the listing query and locality query.

24. The system of claim 20 further comprising a speech recognition system in communication with said control system, said speech recognition system having a grammar based on most frequently requested listings for the directory assistance database,

a) said control system adapted to:

- i) send the listing response for grammar processing;
- ii) send the locality response for grammar processing;
- iii) receive a grammar tag including listing and locality information based on the listing response and the locality response; and
- iv) derive the listing query and locality query from the grammar tag, and

b) said speech recognition system adapted to:

- i) receive the listing response and provide the grammar processing;
- ii) receive the locality response and provide the grammar processing;
- iii) construct the grammar tag based on the grammar processing; and
- iv) send the grammar tag to the control system.

25. The system of claim 20 further comprising a speech recognition system in communication with said control system, said speech recognition system having a grammar based on most frequently requested listings for the directory assistance database,

a) said control system adapted to:

i) send the listing response for grammar processing;

ii) send the locality response for grammar processing;

iii) receive listing and locality information based on the listing response and the locality response; and

iv) derive the listing query and locality query from the grammar tag, and

b) said speech recognition system adapted to:

i) receive the listing response and provide the grammar processing;

ii) receive the locality response and provide the grammar processing;

iii) determine listing and locality information based on the listing response and the locality response using the grammar based on most frequently requested listings; and

iv) send the listing and locality information to the control system.

~~26.~~ A system for directory assistance automation comprising:

a) means for requesting a desired listing and locality from a caller;

5 b) means for storing a listing response and a locality response from the caller;

c) means for generating a listing search query based on comparing the listing response with most frequently requested listings similar to the
10 listing response, said listing search query independent of the locality response;

d) means for generating a locality search query independent of the listing response and based on the locality response;

15 e) means for searching a directory assistance database using the listing and locality queries; and

f) means for processing results of the directory assistance database search to select a number corresponding to the listing response and locality
20 response.

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27. A computer readable medium having software for facilitating automated directory assistance automation without operator intervention and comprising instructions for a computer to:

- a) process an audible listing and locality response from a caller requesting directory assistance;
- b) determine a listing query based on the listing response and a locality query based on the locality response;
- c) initiate a search of a directory assistance database using the listing query and the locality query;
- d) receive a listing response containing at least one record having a listing associated with a number; and
- e) select a record containing a number corresponding to the audible listing and locality response for announcement to the caller.

28. The computer readable medium of claim 27 further comprising instructions to determine the listing query based on the listing response using listing grammar derived from most frequently requested listings for the directory assistance database.

29. The computer readable medium of claim 28 further comprising instructions to determine the locality query based on the locality response using locality grammar derived from most frequently requested listings for the directory assistance database and wherein the listing query is not based on the locality

response and the locality query is not based on the listing response.

30. The computer readable medium of claim 27 further comprising instructions to:

- a) send the listing response for grammar processing to determine listing query information;
- b) send the locality response for grammar processing to determine locality query information;
- c) receive the listing query information and locality query information; and
- d) derive the listing query and locality query from the listing query information and locality query information.

31. The computer readable medium of claim 27 further comprising instructions to:

- a) send the listing response for grammar processing to determine listing query information based on most frequently requested listings for the directory assistance database;
- b) send the locality response for grammar processing to determine listing query information;
- c) receive the listing query information and locality query information; and
- d) derive the listing query and locality query from the listing query information and locality query information.

32. The computer readable medium of claim 27 further comprising instructions to:

- a) send the listing response for grammar processing;
- b) send the locality response for grammar processing;
- 5 c) receive a grammar tag including listing and locality information based on the listing response and the locality response; and
- d) derive the listing query and locality query from the grammar tag.

10 33. The computer readable medium of claim 27 further comprising instructions wherein when the listing response includes a plurality of records, ones of the plurality of records are eliminated until there is one
15 record or a common number throughout any remaining records.

20 34. A method for generating grammar for automated directory assistance comprising:

- a) identifying the most frequently requested listings independent of locality;
- b) grouping synonymous listings within the most frequently requested listings; and
- c) determining a common vocabulary for a group of
25 synonymous listings to define a grammar,

wherein when a requested listing matches any listing in the group of synonymous listings, the grammar is used to generate a listing query used for searching a directory assistance database.

35. The method of claim 34 further comprising:

- a) identifying the most frequently requested localities independent of listing;
- b) grouping synonymous localities within the most frequently requested localities; and
- c) determining a common vocabulary for a group of synonymous localities to define a locality grammar, wherein when a requested locality matches any locality in the group of synonymous localities, the locality grammar is used to generate a locality query used to search the directory assistance database.